Internet2 ION™ FAQ (Frequently Asked Questions)

www.internet2.edu/ion

What is Internet2 ION? **Internet2 ION** (Interoperable On-demand Network) is a network service that provides researchers and network engineers the ability to automatically provision dedicated circuits across network domains to support large data transfers and other bandwidth-intensive applications that are critical to today's global scientific collaborations.

How do I use Internet2 ION? Using a simple, secure web interface, users can reserve in advance—or provision in real time—point-to-point circuits with capacities customized to meet specific application requirements. Users can also easily modify or cancel circuit requests. Built on widely deployed protocols, ION can instantly create circuits across the Internet2 Network and into partner regional, national and international networks to connect researchers with their colleagues worldwide.

How was ION developed? Internet2 ION brings to fruition the vision of dynamic circuit networking developed through a community-wide network research initiative led by ESnet, Internet2 and GÉANT. ION leverages ESnet's OSCARS technology, developed in part through funding by the DOE Office of Science, and DRAGON technology, developed in part through NSF funding by MAX, USC ISI East, and George Mason University. Together, OSCARS and DRAGON enable ION to signal the underlying Internet2 Network infrastructure.

What's the difference between DCN and ION? Over the past few years, the Internet2 community has worked with our partners at ESnet and GÉANT to develop the underlying protocols and software that allow networks to dynamically allocate circuits across domains. This joint research effort has become known as DCN in the community. Now that Internet2 is moving its DCN prototype network into production, Internet2—through the guidance of its Architecture and Operations Advisory Council—felt it was important to distinguish its full operational service from the ongoing collaborative research effort.

Will Internet2 continue to develop DCN technology? Internet2 participates in a number of ongoing collaborative efforts related to dynamic circuit network technology development. Through participation in the DICE (DANTE, Internet2, CANARIE, ESnet) collaborative, we continue to refine the technologies that underpin dynamic circuit networking. We also continue to pursue the standardization of related protocols as part of our work with the Open Grid Forum (OGF). Moving forward, Internet2 plans to focus resources on developing hybrid network technologies that will enable the Internet2 Network to seamlessly and systematically combine both IP and dynamic circuit network resources.

Does IDC technology enable ION as it did with DCN? Yes, the interdomain controller or IDC is what enables the ION service to dynamically signal and set up circuits on demand across network domains. The IDC uses ESnet's OSCARS technology, developed in part

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through funding by the DOE Office of Science, and DRAGON technology, developed in part through NSF funding by MAX, USC ISI East, and George Mason University. By using these widely deployed protocols, ION is able to create circuits into any network that leverages this technology. For a Connector to be ION-enabled it must deploy an IDC and connect to the Internet2 circuit network on which the ION service is currently built.

How can Internet2 members determine if they are ION-enabled? Members should first verify whether their Connector has physically connected to the Ciena network that supports the ION service, either by asking their Connector or checking Internet2's Connector status page at *internet2.edu/dcresearch/connector-status.html*. If the Connector is listed as "ION-enabled," the member should speak with local network administrators and a Connector representative about how they may use the service. If their Connector is not listed as operational, they should engage their Connector to discuss their options. Internet2 staff can play an advisory role in such cases.

Does a campus or regional need to deploy special equipment or software to enable their users to take advantage of ION? There are special technical requirements to become ION-enabled at both the campus and regional levels. Members interested in using ION should contact Internet2 network services at *network@internet2.edu*.

Who administers and authorizes ION usernames and passwords? ION-enabled Connectors can create new ION user accounts through an ION administration web page where usernames and passwords may be added.

How will members troubleshoot problems with ION? The Indiana University Global NOC provides 24x7, 365-day ION support. They may be contacted at *noc@internet2.edu*. Members are also encouraged to use tools such as the ps-Performance Toolkit to help diagnose local network issues.

What is the future roadmap for ION? Internet2 will continue developing ION with a focus on increasing its value to Internet2 members. Future iterations of the ION service will allow users to provision complete end-to-end dynamic circuits. Instead of requiring circuits to start on the Internet2 Network, users will be able to provision circuits that both *start and end* on other dynamic networks. More details on the circuit's status and statistics will be made available, too, for monitoring purposes. User feedback is expected to generate further requirements that Internet2 will use to enhance and evolve the service.

FOR MORE INFORMATION

ION web page
internet2.edu/ion

Check Connector ION-enabled status at
internet2.edu/dcresearch/connector-status.html

Interested members contact
network@nternet2.edu

Try the ION demo at
iondemo.net.internet2.edu
(log in using **guest** *for username and password)*